No. 8800103

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Plant Genetics, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

ALFALFA

'Flint'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D. C. *this* 30th *day of* June *in the year of our Lord one thousand nine hundred and* eighty-eight.

Attest:

Kenneth A. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Richard E. Lyng
Secretary of Agriculture

APPROVAL EXPIRES 2-28-88

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION	3. VARIETY NAME
Plant Genetics, Inc.	83B37	Flint

4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code)	5. PHONE (Include area code)	FOR OFFICIAL USE ONLY
1930 5th St. Davis, CA. 95616	(916) 753-1400	PVPO NUMBER 8800103

6. GENUS AND SPECIES NAME	7. FAMILY NAME (Botanical)	FILING DATE / TIME
Medicago sativa	Leguminoseae	March 8, 1988 10:00 ☑ A.M. ☐ P.M.

8. KIND NAME	9. DATE OF DETERMINATION	FEES RECEIVED
Alfalfa	Foundation-Fall '85	AMOUNT FOR FILING: $ 1800.00 DATE: March 8, 1988 AMOUNT FOR CERTIFICATE: $ 200.00 DATE: April 8, 1988

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.)	11. IF INCORPORATED, GIVE STATE OF INCORPORATION	12. DATE OF INCORPORATION
Corporation	California	January 1981

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

Mr. James C. Weseman
Limbach, Limbach & Sutton
2001 Ferry Building
San Francisco, CA 94111

PHONE (Include area code): (415)433-4150

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED

a. ☒ Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety *(Request form from Plant Variety Protection Office.)*
d. ☐ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act.)* ☐ Yes *(If "Yes," answer items 16 and 17 below)* ☒ No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?	17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ Yes ☐ No	☐ Foundation ☐ Registered ☐ Certified

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?

☐ Yes *(If "Yes," give date)*
☒ No

19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?

U.S.A. - March 26, 1987

☒ Yes *(If "Yes," give names of countries and dates)*
☐ No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT	DATE
Keith A. Walker, Vice President, Research	March 4, 1988
SIGNATURE OF APPLICANT	DATE

FORM LS-470 (3-86) *Edition of 7-84 obsolete.*

8800103

Exhibit 14A:

Flint is a 114 plant synthetic moderate dormant alfalfa cultivar developed by mass selecting plants for resistance to anthracnose. Plants selected were from the following varieties: AS67 (10), Atra 55 (2), Blazer (5), Cascade (5), Duke (20), Expo (14), G-7730 (1), Jubilee (11), Olympic (21), 524 (1), 545 (6), Riley (7), Trident (11). In 1983, plants were pollinated in a screened isolation cage by leafcutter and honey bees to produce breeder seed (Syn 1).

Flint is uniform and stable through the foundation generation, commensurate with other alfalfa cultivars based on 13 years of data collection and observations. The certified seed generation has revealed no variants from the previous generations.

Exhibit 14B:

Flint is most similar to Commandor and Kingstar, but differs in the following pest resistances and dormancy ratings.

Characteristics	Flint	Commandor[a]	Kingstar[a]
Dormancy	4	4	3
Bacterial Wilt	R	R	R
Verticillium Wilt	LR	MR	R
Fusarium Wilt	HR	R	HR
Anthracnose	HR	HR	MR
Phytophthora Root Rot	R	R	R
Spotted Alfalfa Aphid	R	LR	R
Pea Aphid	MR	-	MR
Blue Alfalfa Aphid	S	-	-
Stem Nematode	MR	MR	R

[a] 1987 Alfalfa Varieties - published by the Certified Alfalfa Seed Council.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK AND SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

(Alfalfa)

OBJECTIVE DESCRIPTION OF VARIETY
ALFALFA (*Medicago sativa* sensu Gunn et al.)

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME
Plant Genetics, Inc.	83B37	Flint

ADDRESS (*Street and No., or R.F.D. No., City, State, and Zip Code*)

1930 5th St.
Davis, CA. 95616

FOR OFFICIAL USE ONLY

PVPO NUMBER 8800103

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place numbers in the boxes to designate the expressions which are characteristic of the commerical generations of the application variety. Data for quantitative plant characters should be based on a minimum of 100 plants. Include leading zeros when necessary (e.g., [0][8][9]) for quantitative data. Comparative data should be determined from varieties entered in the same trial. Plant color may be precisely designated by using any recognized color chart, e.g., The Munsell Plant Tissue Color Charts.

1. WINTERHARDINESS:

[6] CLASS.

1 = Very Non-Winterhardy (CUF 101)
2 = Non-Winterhardy (Moapa 69)
3 = Intermediately Non-Winterhardy (Mesilla)
4 = Semi-Winterhardy (Lahontan)
5 = (Du Puits)
6 = Moderately Winterhardy (Saranac)
7 = (Ranger)
8 = Winterhardy (Vernal)
9 = Extremely Winterhardy (Norseman)

TEST LOCATION: Nampa, ID; Rocksprings, PA.

2. FALL DORMANCY:

FALL DORMANCY (DETERMINED FROM SPACED PLANTINGS)

TESTING INSTITUTION AND LOCATION	DATE OF LAST CUT	DATE REGROWTH SCORED	REGROWTH SCORE OR AVERAGE HEIGHT				LSD .05
			APPLICATION VARIETY	CHECK VARIETIES*			
				Saranac AR	Vernal	Lahontan	
Plant Genetics, Inc. Nampa, ID	9/4/84	9/19/84	4.3	4.3	3.0	6.8	0.8
Univ. of Pa. Rocksprings, PA.	9/6/85	9/25/85	10.4	9.4	-	-	1.9

* CUF 101, Moapa 69, Mesilla, Lahontan, Du Puits, Saranac, Ranger, Vernal, or Norseman as appropriate.

Specify scoring system used: Regrowth measured in inches

[5] Fall Growth Habit (Determined from Fall Dormancy Trials)

1 = Erect (CUF 101)
3 = Semierect (Mesilla)
5 = Intermediate (Saranac)
7 = Semidecumbent (Vernal)
9 = Decumbent (Norseman)

3. RECOVERY AFTER FIRST SPRING CUT (In Southwest, first cut after March 21):

[ ]

1 = Very Fast (CUF 101)
3 = Fast (Saranac)
5 = Intermediate (Ranger)
7 = Slow (Vernal)
9 = Very Slow (Norseman)

TEST LOCATION: No Data

4. AREAS OF ADAPTATION IN U.S. (Where tested and proven adapted):

[1] Primary Area of Adaptation

[2] [6] Other Areas of Adaptation

1 = North Central
2 = East Central
3 = Southeast
4 = Southwest
5 = Moderately Winterhardy Intermountain
6 = Winterhardy Intermountain
7 = Great Plains
8 = Other (*Specify*) _____

5. FLOWERING DATE (When 10% of plants possess open flowers at time of first spring cut):

[ ][ ] Days Earlier Than . . . . . [ ]
Same As . . . . . [ ]
[ ][ ] Days Later Than . . . . . [ ]

1 = CUF 101
2 = Mesilla
3 = Saranac
4 = Vernal
5 = Norseman

TEST LOCATION: No Data

8800103

6. PLANT COLOR (Determined from healthy regrowth 3 weeks after first spring cut, controlling leafhoppers if necessary):

[ ] 1 = Very Dark Green (524) 2 = Dark Green (Vernal) 3 = Light Green (Ranger)

COLOR CHART VALUE (Specify chart used): No comparison with varieties listed above.

APPLICATION VARIETY:

VERNAL

TEST LOCATION

7. CROWN TYPE (Determined from spaced plantings):

[2] Noncreeping Types: 1 = Broad (Vernal) 2 = Intermediate (Saranac) 3 = Narrow (CUF 101)

Creeping Types: 4 = Creeping Rooted (Rangelander) 5 = Rhizomatous (Rhizoma)

8. FLOWER COLOR (Determine frequency of plants for each color class as defined by USDA Agricultural Handbook No. 424 (Barnes 1972), allowing all plants in plot to flower):

[98] % Purple and Violet (Subclasses 1.1 to 1.4)

[2] % Variegated Other Than Blue (Subclasses 2.1, 2.2, 2.5 to 2.9)

[Trace] % Cream (Class 3)

[ ] % Blue (Subclasses 2.3 and 2.4)

[ ] % Yellow (Subclasses 4.1 to 4.4)

[Trace] % White (Class 5)

TEST LOCATION: Canyon County, Idaho

9. POD SHAPE (Determine frequency of plants with the following pod shapes produced on well cross-pollinated racemes):

[100] % Tightly Coiled (One or more coils, center more or less closed)

[ ] % Loosely Coiled (One or more coils, center conspicuously open)

[ ] % Sickle (Less than 1 coil)

TEST LOCATION: Canyon County, Idaho

10. PEST RESISTANCE: Provide in the appropriate column, trial data for application variety, and resistant (R) and susceptible (S) check varieties, synthetic generation tested, average severity index scores (ASI), least significant difference statistics (LSD .05), the institution in charge of test, year, and location of test, and whether test is a field or laboratory evaluation. Describe scoring system, and any test procedure which differs from standard methods proposed by Elgin (1982). Trial data from other test years or locations should be presented whenever available on a separate document as Exhibit D.
Seeds of the check varieties and germplasm lines listed below can be obtained from the USDA Field Crops Laboratory, Bldg. 001, Rm. 335, BARC-West, Beltsville, MD 20705. Although comparisons with check varieties listed below are preferred, comparisons with any appropriate check variety recommended by Elgin (1982) may be presented.

A. DISEASE RESISTANCE: DISEASE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	% Resist. ~~AST~~ LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Anthracnose, Race 1 *(Colletotrichum trifolii)*	Application	2	52.6	192	NA	9.4	Plant Genetics, Inc. 1986 Woodland, CA. Greenhouse
	~~Arc (R)~~ Saranac AR (R)		52.4	1022			
	Saranac (S)		1.0	1095			
	SCORING SYSTEM: % seedling survival						
Anthracnose, Race 2 *(Collectotrichum trifolii)* No Data	Application						
	Saranac AR (R)						
	Arc (S)						
	SCORING SYSTEM:						
Bacterial Wilt *(Corynebacterium insidiosum)*	Application	1	40.6	Assumed 150-225	2.40	0.39	Univ. of Minn. 1985 Rosemount, MN. Field
	Vernal (R)		42.0	Assumed 150-225	2.28		
	Narragansett (S)		5.2	Assumed 150-225	3.69		
	SCORING SYSTEM: 0-5; %0's & 1's = % resistance.						
Common Leafspot *(Pseudopeziza medicaginis)* No Data	Application						
	MSA-CW3AN3 (R)						
	Ranger (S)						
	SCORING SYSTEM:						

8800103

DISEASE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Downy Mildew *(Peronospora trifoliorum)*	Application						
Isolate, if known	Saranac (R)						
No Data	Kanza (S)						
	SCORING SYSTEM:						
Fusarium Wilt *(Fusarium oxysporum f. medicaginis)*	Application	2	54.6	Assumed 120-180	2.43	0.77	Univ. of Minn. 1987 Rosemount, MN Field
	Moapa 69 (R)		81.3	Assumed 120-180	2.41		
	~~Narragansett (R)~~ Mn GN-1 (s)		0.9	Assumed 120-180	4.90		
	SCORING SYSTEM: 0-5; % 0's & 1's = % resistance						
Phytophthora Root Rot *(Phytophthora megasperma f. medicaginis)*	Application	1	44.5	203	3.46	0.34	Plant Genetics, Inc. 1984 Woodland, CA. Greenhouse
	Agate (R)		43.0	210	3.57		
	Saranac (S)		4.8	502	4.08		
	SCORING SYSTEM: 1-5; % 1's & 2's = % resistance						
Verticillium Wilt *(Verticillium albo-atrum)*	Application	1	12.1	208	3.62	0.24	Plant Genetics, Inc. 1984 Nampa, ID Greenhouse
	Vertus (R)		34.1	120	2.82		
	Saranac (S)		0.0	102	4.27		
	SCORING SYSTEM: 1-5; % 1's & 2's = % resistance.						
Other *(Specify)*	Application						
	(R)						
	(S)						
	SCORING SYSTEM:						
Other *(Specify)*	Application						
	(R)						
	(S)						
	SCORING SYSTEM:						

B. INSECT RESISTANCE:

INSECT	VARIETY	SYN. GEN. TESTED	PERCENT DEFOLIATION	DEFOLIATION IN PERCENT OF RESISTANT CHECK	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Alfalfa Weevil *(Hypera postica)*	Application						
No Data	Arc (R)			100			
	Saranac (S)						
	SCORING SYSTEM:						

8800103

INSECT	VARIETY	SYN. GEN. TESTED	PERCENT SEEDLING SURVIVAL	NUMBER OF SEEDLINGS TESTED	ASI	% Resist. ~~ASI~~ LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Blue Alfalfa Aphid *(Acyrthusiphon kondoi)*	Application	1	3.5	198	NA	4.1	Plant Genetics, Inc. 1984 Woodland, CA. Greenhouse
	CUF 101 (R)		48.6	193			
	~~PA-1 (S)~~ Mesa Sirsa (s)		0.1	2139			
	SCORING SYSTEM: % seedling survival						
Pea Aphid *(Acyrthosiphon pisum)*	Application	1	28.1	151	NA	9.8	Plant Genetics, Inc. 1986 Woodland, CA. Greenhouse
	~~KS(ZA-TR)~~ CUF 101 (R)		61.8	152			
	~~Ranger (S)~~ Moapa 69 (s)		7.7	2042			
	SCORING SYSTEM: % seedling survival						
Spotted Alfalfa Aphid *(Therioaphis maculata)*	Application	1	38.4	168	NA	12.2	Plant Genetics, Inc. 1984 Woodland, CA. Greenhouse
Biotype, if known:	Kanza (R)		69.3	152			
	~~Ranger (S)~~ Caliverde (s)		0.0	1248			
	SCORING SYSTEM: % seedling survival						

INSECT	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Potato Leafhopper Yellowing *(Empoasca fabae)*	Application						
No Data	MSA-CW3An3 (R)						
	Ranger (S)						
	SCORING SYSTEM:						
Other *(Specify)*	Application						
	(R)						
	(S)						
	SCORING SYSTEM:						

C. NEMATODE RESISTANCE: NEMATODE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Northern Root Knot *(Meloidogyne hapla)*	Application						
No Data	Nev. Syn. XX (R)						
	Lahontan (S)						
	SCORING SYSTEM:						

10. C. NEMATODE RESISTANCE (Continued)

NEMATODE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Southern Root Knot *(Meloidogyne incognita)*	Application						
No Data	Moapa 69 (R)						
	Lahontan (S)						
	SCORING SYSTEM:						
Stem Nematode *(Ditylenchus dipsaci)*	Application	1	22.8	102	3.08	0.27	Plant Genetics, Inc. 1986 Woodland, CA. Greenhouse
	Lahontan (R)		39.3	95	2.78		
	Ranger (S)		3.0	273	3.86		
	SCORING SYSTEM: 1-5; % 1's & 2's = % resistance						
Other *(Specify)*	Application						
	(R)						
	(S)						
	SCORING SYSTEM:						

11. INDICATE THE VARIETY THAT MOST CLOSELY RESEMBLES THE APPLICATION VARIETY FOR EACH OF THE FOLLOWING CHARACTERS:

CHARACTER	VARIETY	CHARACTER	VARIETY
Winterhardiness	Saranac AR	Plant Color	No Critical Data
Recovery After 1st Cut	Saranac AR	Crown Type	No Critical Data
Area of Adaptation	Saranac AR	Combined Disease Resistance	Commandor
Flowering Date	No Critical Data	Combined Insect Resistance	Kingstar

REFERENCES

Barnes, D.K. 1972. A System for Visually Classifying Alfalfa Flower Color. U.S. Dep. Agric. Handb. 424. 18 pp. (Note: Greenish cast of plate 6, A and B is an artifact of printing, actual colors a blend of yellow and white.)

Elgin, J.H., Jr., (ed.). 1982. Standard Tests to Characterize Pest Resistance in Alfalfa Cultivars. U.S. Dep. Agric. Tech. Bull. (In Press).

Gunn, C.R., W.H. Skrdla, and H.C. Spencer. 1978. Classification of Medicago sativa L. using legume characters and flower colors. U.S. Dep. Agric. Tech. Bull. 1574. 84 pp.

Munsell Color Co. 1977. Munsell Plant Tissue Color Charts. Munsell Color Co., Inc. Baltimore.

NOTE: Any additional descriptive information and supporting documentation may be provided as Exhibit D.

Exhibit 14E:

The principal breeder, Ike Kawaguchi, was employed by Plant Genetics, Inc. All rights to alfalfa varieties developed by the breeder while employed by Plant Genetics, Inc. are assigned to Plant Genetics, Inc.